

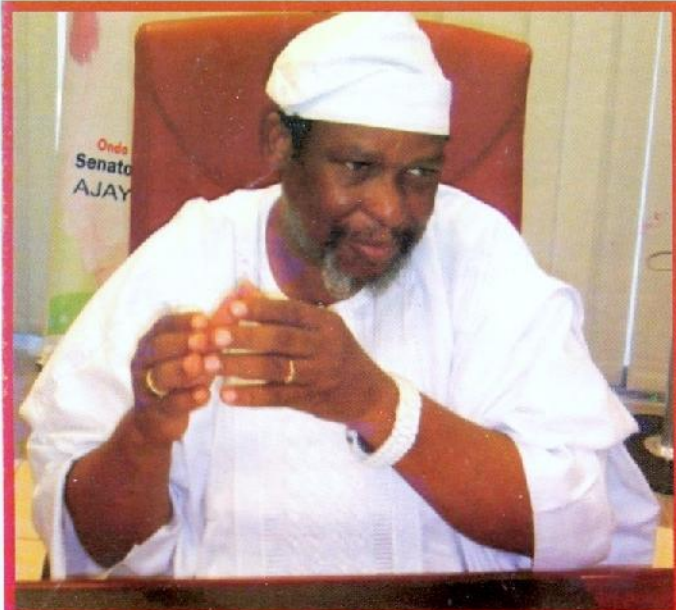


NBRRI

NEWSLETTER

Vol. 1, No. 9, December 2012

The Quarterly Newsletter of the Nigerian Building and Road Research Institute

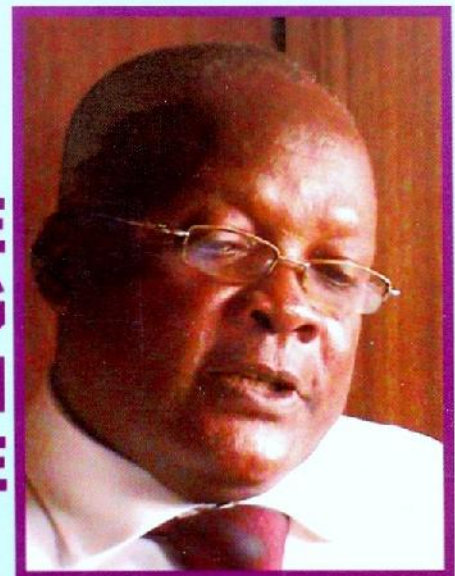


SENATOR (PROF) ROBERT BOROFFICE
(Senate Committee Chairman, Science & Technology)

**SCIENCE & TECH.
IS THE ONLY VIABLE
TOOL TO DRIVE
MR. PRESIDENT'S
TRANSFORMATION
AGENDA...Pg13**

**NBRRI IS ON COURSE
TOWARDS BECOMING
A LEADING RESEARCH
INSTITUTE**

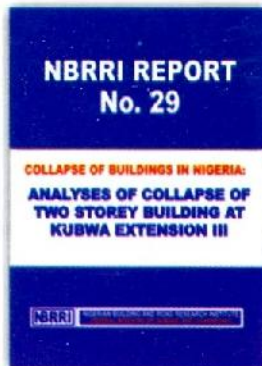
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DR FRANCIS AITSEBAOMO
Deputy Director, Road Research Department, NBRRI

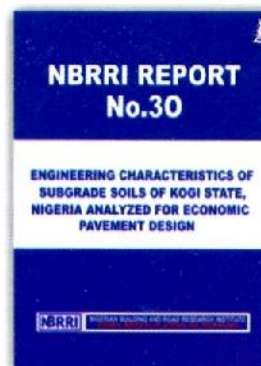
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NEW NBRI PUBLICATIONS



NBRI REPORT No. 29

COLLAPSE OF BUILDINGS IN NIGERIA: ANALYSES OF COLLAPSE OF TWO STOREY BUILDING AT KUBWA EXTENSION III; 38pp



NBRI REPORT No. 30

ENGINEERING CHARACTERISTICS OF SUBGRADE SOILS OF KOGI STATE-NIGERIA, ANALYSED FOR ECONOMIC PAVEMENT DESIGN; 25pp.

OTHER RECENT PUBLICATIONS

- NBRI REPORT No 22: TECHNICAL REPORT ON COLLAPSE OF A 2-STOREY BUILDING AT MARARABA (NEAR ABUJA); 22pp
- NBRI REPORT No 23: TECHNICAL REPORT ON THE COLLAPSE AT ADENUBI CLOSE, IKEJA, LAGOS, NIGERIA; 19pp
- NBRI REPORT No 24: PRLIMINARY SURVEY OF SOME LIMESTONE DEPOSITS IN NIGERIA; 12pp
- NBRI REPORT No 25: PRLIMINARY SURVEY OF SOME CLAY DEPOSITS IN NIGERIA; 8pp
- NBRI REPORT No 26: REPORT ON COLLAPSED BUILDING IN ILORIN, KWARA STATE, NIGERIA; 16pp
- NBRI REPORT No 27: DESIGN AND FABRICATION OF WATER-BITUMEN SPRAYING MACHINE; 16pp
- PROCEEDINGS OF NBRI STAKEHOLDERS' FORUM: BRIDGING THE GAP BETWEEN BUILDING AND ROAD RESEARCH AND STAKEHOLDERS'; 98pp
- PROCEEDINGS OF NATIONAL TECHNICAL WORKSHOP ON BUILDING COLLAPSE IN NIGERIA: CURBING THE INCIDENCES OF BUILDING COLLAPSE IN NIGERIA; 140pp
- THE CHALLENGES OF BUILDING COLLAPSE IN NIGERIA; 52pp
- NBRI TECHNOLOGIES FOR VILLAGE RENEWAL AND CLUSTER PROJECTS; 20pp

These NBRI publications, which are available at NBRI Office at nominal fees, will be found useful by all Stakeholders' in the construction industry including professionals, professional bodies, construction companies, contractors, Governments, the academia, individuals, etc.

EDITORIAL

The year 2012 will certainly go into the annals of the Nigerian Building and Road Research Institute (NBRI) as a memorable and eventful year. It was marked by a beehive of activities and achievements for staff and for the Institute in general. These include but are not limited to the increased R&D activities and achievements witnessed; the enhanced promotional activities on NBRI technologies involving the provision of several Skills Acquisition Centres with NBRI technologies; the improved collaborations and activities with Stakeholders such as professionals, professional associations, regulatory bodies, the FMST, the National Assembly, relevant public agencies and private organizations, amongst others. It is also a year that NBRI witnessed a quantum leap in its public image and awareness of its activities both nationally and internationally.

Most of the activities were largely reported in quarterly NBRI Newsletters. At the risk of being accused of self-adulation, the responses received on the quarterly NBRI Newsletters, resuscitated in the first quarter of 2011 and sustained till now, have been instructive and encouraging. Indeed, this edition is the fourth for 2012 and the eighth under the leadership of Professor D.S Matawal as the DG/CEO. It is gratifying to observe that NBRI Newsletter is fast becoming a household name especially among the S&T family and the R&D Innovations chain, in general.

True to character, the package of this edition is spiced with a lot of news items, feature articles, interview of dignitaries, etc. NBRI Newsletter had an exclusive interview with the Chairman, Senate Committee on Science and Technology, Senator (Prof) Robert Ajayi Boroffice, who shared his thoughts on the state of Science and Technology in Nigeria. Also featuring in this edition is the one-on-one chat which NBRI Newsletter had with Dr. Francis Aitsebaomo, the Head of Road Research Department and the Coordinator of the National Laboratory Complex of NBRI in Ota, Ogun State. He bared his mind on R&D activities as well as on the challenges at the NBRI National Laboratory Complex in Ota. His interview is instructive because he is one of the few staff of NBRI with up to 30 years experience

The Lagos Zonal Office located at 15, Awolowo Road, Ikoyi is wearing a new look and this is captured as News item and complemented in an interview with the Head of Lagos Zonal Office, Mrs. Mabel Igweonu. Other interesting features include reports on NBRI-FRSC collaborative research on Road Traffic study and speed analysis in Abuja; drafting of curriculum for Artisans in the construction industry; NBRI's participation at the 2012 Lagos and Abuja International Trade Fairs, among others.

It is indeed a bumper package. Please read on.....

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NBRI (VISION, MISSION & CORE VALUES)

BUILDING CAPACITY & SETTING THE PACE IN INDIGENOUS CONSTRUCTION TECHNOLOGY DEVELOPMENT

VISION

To evolve and use a comprehensive and integrated approach in appropriate technology development and transfer, sustainable capacity building and investment promotion.

So as to foster the application of environment-friendly and energy-efficient innovation construction materials, manufacturing technologies and cost-effective building and road construction practices.

Which will enhance job-creation, wealth generation and poverty reduction as well as nurture the emergence of vibrant, knowledge-based and highly competitive indigenous construction companies capable meeting global standards.

MISSION

Integrated R&D, capacity building and robust extension services in which technological innovation and knowledge-based practices in the fields of building, road, and engineering materials will be used to provide adequate and affordable housing and road infrastructure as well as increased economic empowerment.

CORE VALUES

- Professionalism
- Commitment and integrity
- Resourcefulness
- Innovativeness

CREATIVITY ON DISPLAY AS NBRII FEATURES AT ABUJA AND LAGOS INTERNATIONAL TRADE FAIRS

In exploring one of the avenues to showcase its numerous research breakthroughs and achievements to Stakeholders, the Nigerian Building and Road Research Institute (NBRII) recently displayed its Research & Development (R&D) Innovations at the 2012 Abuja and Lagos International Trade Fairs.

The 7th Abuja International Trade Fair, whose theme was *"Transformation and Repositioning SMEs as Growth Drivers for Economic Development"* was organized by the Abuja Chamber of Commerce, Industry, Mines and Agriculture (ABUCCIMA). It was well patronized and well attended. Over two hundred and twenty-one local, regional and foreign investors participated in the fair, including Federal Government Parastatals/Agencies, private-sector organizations and High Commissions of different countries.

On hand to deliver their various goodwill messages at the opening ceremony were representatives of His Excellency, the President of the Federal Republic of Nigeria and Commander-in-Chief of Nigerian Armed Forces, Dr. Goodluck Ebele Jonathan, GCFR; the Hon. Minister of Agriculture, Dr. Akin Adesina; the Hon. Minister of the Federal Capital Territory (FCT), Senator Bala Mohammed; and, the Hon. Minister of Trade and Investment, Chief Olusegun Aganga, among others. The President of ABUCCIMA, Engr. Solomon Nyagba and the President of NACCIMA, Dr. H.A.B. Ajayi also spoke at the event.

The display stand of NBRII was a center of attraction as the Institute innovatively and distinctively constructed its stand using its technological

innovations, the INTERLOCKING BLOCKS. This unique initiative further endeared about two hundred and thirty five people who visited the stand to express interest on the Institute's R&D products. There was also the display of an array of NBRII's technologies. This was complemented by poster displays; display of technical publications, reports, NBRII Newsletter; as well as conducting practical demonstrations on the production and use of NBRII technologies in construction.

Similarly, NBRII effectively participated at the 2012 Lagos International Trade Fair which was organized by the Lagos Chamber of Commerce and Industry (LCCI). The Fair, whose theme was *Promoting Trade for Sustainable Economic Transformation*, took place at the Tafawa Balewa Square, Lagos from the 2nd-11th November, 2012. It attracted local exhibitors made up of organizations from Federal Government Agencies/Parastatals, State Governments, Private Sector organizations, Banking Industry, etc.; as well as foreign exhibitors notably from Japan, Malaysia, Czech Republic, China, Senegal, Kenya, Cameroon, Ivory Coast, Republic of Benin and Ghana. The Fair also attracted people from all walks of life both locally and internationally.

On hand to declare the Fair open was the National President of the National Association for Chamber of Commerce, Industries, Mines and Agriculture (NACCIMA), Dr. H.A.B. Ajayi. As indicated by the organizers, the Fair was aimed at promoting Nigeria's non-oil exports, the accelerated development of commerce and Industry, made-in-Nigeria products, evolution of Nigeria's trade with

Continued on page 5



NBRI ORGANISES TRAINING FOR CONTRACTORS

The Nigerian Building and Road Research Institute (NBRI) organized a five day training programme for Contractors who won contracts to construct *Skills Acquisition Centres* using the Institute's cement-stabilized Interlocking Blocks technology. The training programme which took place from 12th-17th November, 2012 at the NBRI Laboratory Complex in Ota, Ogun State was designed to among other things:

- Equip the technical operatives of the Contractors with the technical know-how and capacity for the production and use of NBRI interlocking blocks in the construction of the *Centres*
- Ensure quality control and assurance in the use of NBRI technologies in the construction of the *Centres*
- Use the programme as a platform for the popularization of NBRI technology in the provision of affordable housing and other structures

The advantages of the technology (NBRI Cement-Stabilized Interlocking Blocks) over conventional sandcrete blocks include but are not limited to the following:

- Higher compressive strength
- Lower production and laying costs of the interlocking blocks

- Has aesthetics/beauty and needs no external painting while internal painting may be optional
- Better thermal comfort
- Fire resistance
- Better bullet proof capacity

The Contractors were drawn from the different geo-political zones of the country. Participants included twenty-six representatives of six indigenous construction companies, namely Degbane Engineering Ltd, Studio Apartment Ltd, Habitat Anatomy, De'cor Associates Ltd, Semicon Ltd and R. Martins Ltd.

The training programme which was a mix bag of hands-on-lectures and practical sessions, was coordinated by a team from NBRI headed by Builder Hafizu Wali, the Director, Consultancy and Extension Services Department (CESD) in the Institute. He also gave the keynote address. The programme was declared open by Engr. F. I. Apeh, Head of Engineering Materials Research Department, on behalf of the DG/CEO of NBRI, Prof D. S. Matawal. In his welcome address, he advised the contractors/trainees to avail themselves of the unique opportunity and embrace the alternative technology which is simple in concept, production and application. He also enjoined them to see themselves as good ambassadors of NBRI alternative technologies.

Continued from page 4

the outside world as well as exploring prospects for foreign and local investments in strategic areas. This was largely achieved as the Fair created opportunities for business relationships and contacts to be made between exhibitors of different products, goods and services from within and outside Nigeria and the Nigerian business community/general public.

Notably, the Institute's stand at the Fair attracted a lot of visitors and investors; both local and foreign. At the NBRI stand was the poster display of its technological innovations, including the Institute's

printed publications and fliers. Indeed, visitors to the Institute's stand were delighted over the array of technological innovations in the field of building and road sector that were on display.

However, a cross-section of the critical comments made by visitors to NBRI's stand centred on the need for NBRI to intensify its popularization drive on its certified innovations to the grassroots and should include the training of artisans on the use of alternative materials and technologies in the construction industry. This was one area NBRI has concentrated its efforts on in the recent past.

NBRI IS ON COURSE TOWARDS BECOMING A LEADING RESEARCH INSTITUTE

...DR FRANCIS AITSEBAOMO (Deputy Director, Road Research Department and Coordinator, NBRI National Laboratory Complex, Ota)

Coordinating the 'nerve-center' of research activities at NBRI National Laboratory Complex at Ota, Ogun State and heading a core research department at the same time is no easy feat. Yet, the amiable and unassuming Francis Aitsebaomo is handling these responsibilities with calm and finesse. The editorial crew of NBRI Newsletter was recently in Ota and had an interview session with this gentleman, whose over 30 years of experience as staff of the Institute, was exciting to relive. Below is the account of the Interview.



N B R R I Newsletter: Sir, can you tell us a little bit of yourself?

DR.

AITSEBAOMO: I am Francis Aitsebaomo, from Fugar in Edo State. I joined NBRI precisely on the 7th of February,

1983. Thereafter I have been involved in a lot of research activities spanning thirty (30) years. I have authored and co-authored several technical papers as well as attended and presented papers in several local and international conferences. Presently I am the Head of Road Research Department and Coordinator of the Institute's National Laboratory Complex (NLC) in Ota.

NBRI Newsletter: As the Coordinator of the NLC, how have you been finding the duties of managing both human and financial resources at this end of the Institute?

DR. AITSEBAOMO: As far as finances are concerned, I will say that there is not much fund to manage. In terms of human resources, well I will say that the relationship among staff at Ota is quite cordial and impressive. We might

have had problems in the area of attendance of staff to work but I will put the rate of attendance to work by staff at 80%. Other challenges we faced in the past in Ota were in the area of power and water supply to the Institute. This made the working environment not so much conducive. But I am happy to say that these challenges are being addressed promptly.

NBRI Newsletter: The core mandates of NBRI lie mostly with the activities that take place at the National Laboratory Complex. As the Coordinator, what are some of the activities currently taking place in Ota?

DR. AITSEBAOMO: Of recent, some young Research Officers were employed to address the dearth of research personnel faced by the Institute over the years. Also there was the challenge of obsolete equipment in the laboratories which is also being presently

"So FERMA and other stakeholder agencies the Federal Ministry of Works and all Ministries of Works in all States and all Local Governments in the Federation can take advantage of these subgrade soils maps in their road maintenance and construction activities."

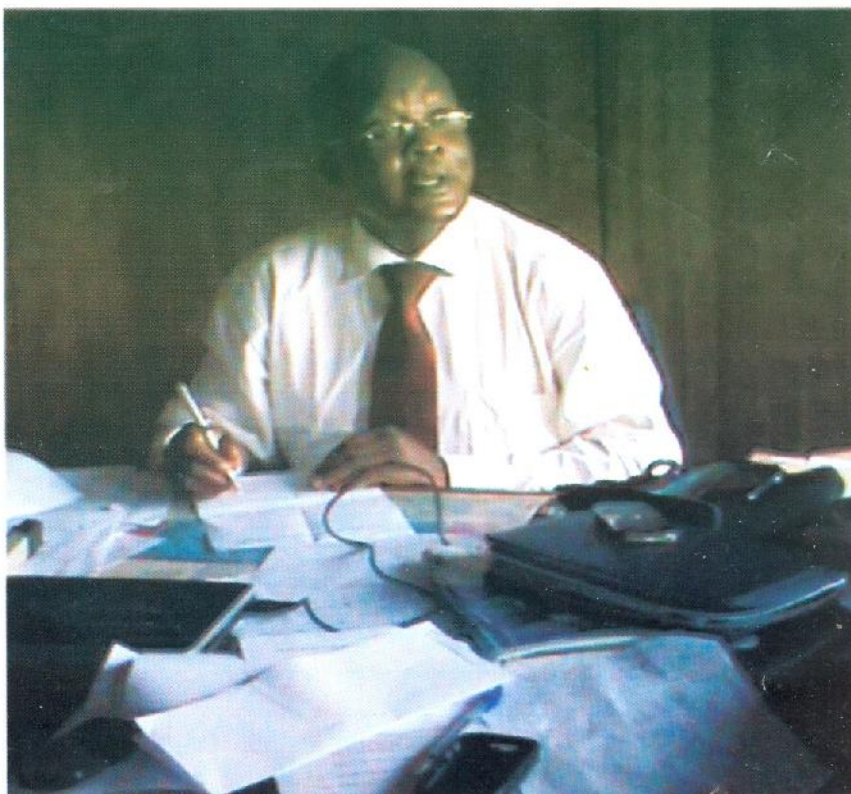
tackled. However, a major challenge now is the lack of senior research officers to guide the new research officers. So we now have a situation where state-of-the-Art equipment are being purchased but only a few experienced hands are on ground to handle them. But again, I believe all these challenges will be overcome soon.

NBRII Newsletter: Now as the Head of Road Research Department, what projects is the department currently involved in?

DR. AITSEBAOMO:

Over the years, we have identified quite a number of research projects to undertake but because of the few research officers in the department, we were not able to carry out most of the research projects. However, with the recruitment of new research officers, who I can confirm have shown much enthusiasm and promise, the Road Research Department has commenced these projects. Presently we are looking into sub-grade soils in Nigeria and also carrying out road failure investigations on some strategic roads in Nigeria. We are also currently involved with the promotion and provision of rural access road projects using community-based technology developed by the Institute. Before now the department developed and produced the engineering/subgrade soils maps of some States in Nigeria in an analogue form but presently we are digitizing all these maps.

“Well I think the present management has started on the right footing by bringing in fresh research officers.”



NBRII Newsletter: Still on the sub-grade soils investigation; can you elaborate more on it especially the States you have covered so far?

DR. AITSEBAOMO:

Well, the sub-grade soil investigation started way back in 1982 with the research into the black cotton soils of North-eastern Nigeria. Thereafter we wanted to look into problematic soil areas all across Nigeria. With regards to the States so far covered in the investigation, I can tell you that we have completed all the States in the eastern and western part of Nigeria. Benue and Kogi States as well as the Federal Capital Territory have been covered and work completed. In the north, we have completed work on most of the States; but we are yet to produce the final sub-grade soils maps of a few States. For these States, the department has conducted all the field investigations and currently, the laboratory works on the projects are on-going. So we have covered Niger, Kano, Katsina, Sokoto, Kaduna, Plateau and Nasarawa States. We hope to add Taraba, Gombe and Borno States soon. Within the next year or two, we hope to cover all the States of the Federation.

NBRRI Newsletter: In your opinion, what do you think are the benefits of these projects to the Institute, Stakeholders and Nigeria as a whole?

DR. AITSEBAOMO: Definitely, the benefits of the sub-grade soil mapping are enormous. For one, it will reduce the cost of undertaking preliminary studies of soils for road construction projects. One can also obtain at a glance, the digitized sub-grade maps if you have the relevant software. One can check any particular area of interest in the country and obtain all the soil engineering information associated with that particular area; that is, the soil classification parameters; the soil strength parameters, the bearing capacity of the soils, etc. This saves time and funds by eliminating the need for preliminary investigations; hence, one can go straight to commence detailed field investigation.

In a pavement structure, we have the overlay (asphalt) then the base, then the sub-base and then the sub-grade. The sub-grade happens to be the foundation on which the road pavement is constructed; so when there is a problem with the sub-grade, it will definitely affect everything and the road is bound to fail. So FERMA and other stakeholder agencies can take a huge advantage of our data base to guide them in their road maintenance and construction activities.

"We also have a peculiar situation. Some research officers, when employed, don't stay too long with the Institute as they tend to seek for greener pastures elsewhere especially in the private sector."

Similarly, the Federal Ministry of Works and all Ministries of Works in all States and all Local Governments in the Federation can take advantage of these subgrade soils maps in their maintenance and construction activities. For instance, you are aware that the Benin–Ore-Shagamu expressway is always experiencing perennial road failure. Any of these Agencies can say: Okay NBRRI, you already have the sub-grade map of this area; let's have it to assist

"So the onus is on us the old hands to train them and also subject them to rigorous schedules."

in our road construction and maintenance activities and tackle the problem. So you can clearly see that the maps will reduce to the barest minimum, the cost of undertaking any

detailed field investigation on that particular route. Also, it will benefit Local Government Areas around the country that want to construct rural access roads within their locality. These are some of the benefits

NBRRI Newsletter: In carrying out these projects, what has been the major challenges being faced?

DR. AITSEBAOMO: Like I stated earlier, the major challenge was staffing; but this is being addressed with the new research personnel recently employed. We also have a peculiar situation. Some research officers, when employed, don't stay too long with the Institute as they tend to seek for greener pastures elsewhere especially in the private sector. But I hope this will not be the case of the new research officers. Also like I earlier stated, the department has only three (3) senior research officers which makes work a bit difficult. These are some of the challenges faced by the department.

NBRRI Newsletter: As the current Coordinator of the NLC, Ota, what advice will you give the present Management of the Institute as to the steps to take in actualizing its mandate?

DR. AITSEBAOMO: Well, I think the

present Management has started on the right footing by bringing in fresh research officers. This will inject new blood into the system. Presently there is a challenge of furniture at the offices in Ota, but I have been reliably informed that this will soon be addressed. Then staff can be motivated by providing the necessary enabling environment for them to work. There should also be provision for recreational facilities for staff as a means of unwinding and motivation. Also there is the need for more staff training programmes as capacity building is very important for the Institute. For instance, in the road department, it is always difficult to retain research officers in the areas of Geotechnics and Highway Engineering. So, staff should be encouraged to stay via capacity building or other ways as most of them just come here, gain experience and leave for some better place.

NBRI Newsletter: As Coordinator of NLC, Ota, you are very much part of the present Management of the Institute. But how will you candidly assess the leadership style of the current Management?

DR.AITSEBAOMO: How? And who do you want me to assess?

NBRI Newsletter: You and your boss (General laughter)

DR.AITSEBAOMO: Good Excellent (laughter continues)

NBRI Newsletter: You have mentioned that new staff have been injected into the system. How will you assess the new hands that were employed into the Road Research Department in terms of their involvement and enthusiasm to work?

DR.AITSEBAOMO: Like I mentioned earlier, there was a dearth of research officers in the department. So when the new hands came, we had to provide the basic training for them. Then we

challenged them. You see, these new staff is fresh from the Universities and there are challenges on ground. So the onus is on us the old hands to train them and also subject them to rigorous schedules by asking them to undertake various tasks, assignments and topics. You see, before you

"I see NBRI at the global chart as one of the leading research institutes in the world"

embark on any research, one must identify the problem and do your literature review. So I can assure you that all the new staff in the Road Research Department have been tasked with at least one research

topic to handle on behalf of the Institute. You also know that these new staff just came on board, so it will be difficult to fully assess them; but so far, they are doing wonderfully well.

NBRI Newsletter: How do you foresee NBRI in the next couple of years? Say the next five (5) years?

DR.AITSEBAOMO: I see NBRI at the global chart as one of the leading research institutes in the world.

NBRI Newsletter: Any advice to staff of the Institute?

DR.AITSEBAOMO: Staff should know that things take time to happen. It is said that Rome was not built in one day; as such, staff should persevere and with that, they will achieve and reach greater heights.

NBRI Newsletter: Finally you spend most of your time doing research, working from Monday to Friday and sometimes even on Saturdays. So how do you unwind?

DR.AITSEBAOMO: It is true I work all through the week and most times on weekends but when I meet with my friends, we unwind by taking strolls and other ways.... you know they say Men will always be Boys (general laughter)

NBRI Newsletter: Thank you very much, Sir!

NBRI HOLDS WORKSHOP ON CURRICULLUM DEVELOPMENT FOR ARTISANS IN THE CONSTRUCTION INDUSTRY



Cross-section of participants of the workshop

In pursuant of its mandate to build capacity and conduct integrated and applied Research and Development in the construction sector of the economy, NBRI conducted a Workshop on the Development of Curriculum for Artisans in the Construction Industry between 27th -31st of August 2012 at NBRI Administrative Headquarters, Jabi, Abuja. The primary objective of the Workshop was to design and effectively manage technical training programmes and pilot training centers within the construction sector that leverages its demand-driven curriculum to produce technically competent skilled or semi-skilled workers that would suit the construction industry accordingly.

The need for the Workshop was sequel to one of the decisions reached at the NBRI-organised and well attended National Technical Workshop on Building Collapse in May 2012; and as contained in the Communiqué of the Workshop. It was recognized that one of the major contributory factors to the high incidences of building collapse in Nigeria was and is still the dearth of trained Artisans which has led to high incidences of quackery, poor workmanship and use of poor quality construction materials in construction. It was therefore decided that NBRI, in collaboration with the National Board for Technical Education (NBTE) and other professional bodies, should develop and implement a robust, practical, relevant and competent Curriculum for the training of artisans, craftsmen, and other construction workers at all levels in the fields of design detailing, draughtsmanship, asphalt use in roadworks, masonry work, brick/block making, iron mongery, etc. The development of the Curriculum will be preparatory to the setting up of a NBRI

Academy for the certification of Artisans for the Nigerian construction industry.

The Workshop was attended by twelve participants from the Building Research Department and Road Research Department of the Institute with a resource expert. During the workshop, the resource expert, Engr. J.O Falade, formerly of the National Board for Technical Education, NBTE, gave an overview on the model, concept, development and implementation of a viable Curriculum. After various interactive sessions, brainstorming and discussions, technical profiles for the short-term training of various tradesmen in the construction industry were evolved. It was however noted that when the Curriculum is fully operational, NBRI will function as the Technical and Vocational Education (TVE) hub (Scheme) connected to a network of Occupational Training Centers (Venues) to be spread across the country. Programs to be run at various levels of qualifications will be tailored to match the commercial and operational needs of construction industry and the nation as a whole.

It is expected that the scheme will be a source of empowerment not only to the trained individuals but the whole community, since both the young and old people can be trained and certification given to them in accordance with the level of training received. The program (workshop) is in line with the Federal Government's emphasis on reforming "Technical Vocational Education" in Nigeria and establishment of new concepts referred to as "Vocational and Innovative Enterprise Institutions". It is expected that provisional approval will be given to NBRI by the Federal Ministry of Education/National Board for Technical Education to operate as a Vocational Enterprise Institution (VEI) and Innovational Enterprise Institute (IEI); and later upgraded to the award of professional diploma. It is hoped that this will go a long way in addressing the dwindling level of occupational skill training system particularly in the construction industry.

NBRRI AND FRSC COLLABORATE ON TRAFFIC SPEED STUDY ANALYSIS



Cross-section of NBRRI-FRSC investigators before commencing work

In line with its mandate of promoting road safety on Nigerian roads and investigating measures to reduce road traffic accidents and fatalities, the Nigerian Building and Road Research Institute (NBRRI) in collaboration with the Federal Road Safety Corps (FRSC) commenced a study on Road Traffic speed analysis within the Abuja metropolis in Nigeria.

This study was considered critical for many reasons. Firstly, the UN General Assembly proclaimed the period 2011-2020 as the Decade of 'Action for Road Safety', with a goal to stabilize and then reduce the forecast level of road traffic fatalities around the world. Many Governments around the world have been encouraged to develop their national plans in line with this global plan. This will involve implementing Road safety interventions in three broad areas: Enlightenment, Engineering and Enforcement. While Enlightenment focuses on increasing general public awareness on best practices for road use, the Engineering aspect focuses on the construction and maintenance of adequate infrastructure required for making roads safe for all categories of users; and Enforcement focuses on compelling road users to comply with road safety rules and prosecution of defaulters.

Secondly, Vehicle speed is a critical goal in road design because speed levels have significant

impact on severity of injury to both occupants and pedestrians in the event of an accident.

Thirdly, Traffic speed is a critical parameter in transportation engineering and its analyses provide quantitative overview relating to time, comfort, safety, convenience and

economics associated with traffic speed.

The study was carried out on the following selected spots on the Abuja ring road:

- Wuye Junction
- Apo Bridge
- Benue Links By CBN Junction
- Aguiyi Ironsi Barracks
- PW Construction By Mpape Bye-Pass
- Nicon Junction
- Banex Bridge
- Berger Junction

Spot speeds of vehicles at specific hours of the day and night were measured to determine the speed distribution and trends of traffic stream at the specific locations. This was with a view to establishing among others driver's behavior during both conditions. In general, the characteristics under prevailing traffic conditions at specific locations along the roadway were recorded.

When the study is completed, the data generated will assist in making speed related decisions which generally impact on the specification and regulation of designed speed limit to ensure accident free roads; avoid traffic congestion and promote road safety on Nigerian roads.

NBRI PLANS TO HOLD NATIONAL TECHNICAL WORKSHOP ON ROAD PAVEMENT FAILURE IN NIGERIASETS UP NATIONAL PLANNING COMMITTEE

The Nigerian Building and Road Research Institute (NBRI) announces a **NATIONAL TECHNICAL WORKSHOP ON ROAD PAVEMENT FAILURE IN NIGERIA** which is scheduled to take place in April, 2013 in Abuja.

The Theme of the National Workshop is **THE CHALLENGE OF ROAD PAVEMENT FAILURE IN NIGERIA** while the major Sub-Themes include

- Ø Road Asset Management and Road Maintenance
- Ø Road Traffic and Safety
- Ø Pavement Materials
- Ø Contract Administration

The primary aim is to wholistically address and proffer workable solutions to the perennial challenge of road pavement failure that has affected Nigeria's socio-economic terrain and has remained a source of concern and embarrassment to Governments and Nigerians. The National Workshop is open to all Stakeholders including relevant Professionals in the built environment; Professional associations; Regulatory bodies; the Academia; FERMA; NEMA; FRSC; SON, Federal and State Ministries of Works; Federal and State Ministries

of Science & Technology, etc.; House and Senate Committees on Works; House and Senate Committees on Science & Technology at the Federal and State levels; Bureau of Public Procurement; Construction companies; Contractors and Consultants; Insurance Companies; Civil Society groups; Media practitioners; other Stakeholders not mentioned; and the general public.

A National Planning Committee, chaired by the Director-General/CEO, NBRI, Professor D.S. Matawal, with membership drawn from representatives of the Council for the Regulation of Engineering in Nigeria (COREN), Nigerian Society of Engineers (NSE), Federal Road Maintenance Agency (FERMA), Federal Ministry of Works (FMW), Federal Road Safety Commission (FRSC), National Emergency Management Agency (NEMA), NBRI have been inaugurated and have begun work. Membership of the Committee has been extended to include representatives of Contractors, Consultants, etc.

Interested Stakeholders and members of the public wishing to participate in the National Workshop are advised to indicate interest and register early enough. Furthermore, Participants

wishing to present Papers are advised to forward electronic copies of well researched Papers on the subject matter to the Director-General, NBRI, Plot 449 Samuel Ogedengbe Crescent, Jabi, PMB 5065 Wuse GPO Abuja. The soft copy should be in Word, Calibri font, 12pt. font size and should have a reference and forwarded to nbriroadconf2013@gmail.com. All diagrams, tables and photographs should be properly captioned.



SCIENCE & TECHNOLOGY IS THE ONLY VIABLE TOOL TO DRIVE MR. PRESIDENT'S TRANSFORMATION AGENDA

... SENATOR (PROF) ROBERT BOROFFICE (*Senate Committee Chairman, S&T*)

In 2003, Nigeria joined the exclusive club in the comity of nations when it ventured into space technology with the launching of her first satellite into orbit. The anchorman for this national and technological feat was Professor Robert Ajayi Boroffice who was then the Director-General/CEO of the National Space Research and Development Agency-under the Federal Ministry of Science and Technology. The erudite professor of human genetics has since moved on to become a distinguished Senator of the Federal Republic of Nigeria. By stroke of providence, Senator (Professor) Boroffice is currently the Chairman of the Senate Committee on Science and Technology.

It was indeed a rare privilege for NBRI Newsletter to track down Senator Boroffice for an interview. In this exclusive interview, Senator (Prof) Boroffice gave his candid views on Nigeria's space technology, its impact on national economy, the role and place of Science and Technology in national development, the way forward for Nigeria and a host of other issues.



NBRI Newsletter: Prof, taking a look into your antecedence, you mid-wifed three agencies under the Federal Ministry of Science & Technology; National Space Research and Development Agency (NASRDA), the National Biotechnology Development Agency (NABDA) and the National Information Technology Development Agency (NITDA). Can you tell

us more about your passion and drive for science and technology?

Senator Boroffice: Thank you very much. Well, by nature, anything I find myself doing I give it all the attention it deserves. Even if I had found myself in agriculture, I would have given it the same passion. I must say it is a privilege for me to have been in the Federal Ministry of Science and Technology at the time that the relevance of Space, Biotechnology and Information Technology were apparent; and I had that challenge to develop programs in those areas. I am happy that we were able to midwife three agencies and that today, they are doing very well.

NBRI Newsletter: Sir, the Science and Technology family has gained a lot from your wealth of experience. But for those who do not know, can you intimate us on your area of specialization in Science and Technology?

Senator Boroffice: I am a Geneticist. I had my first degree in Zoology and PhD in Human Genetics. Indeed, I did my PhD in congenital malformations in children, looking at the abnormal chromosomes which are the main genetic material. But you know science itself is a



convergence of ideas and space is a field where everybody has his contribution to make. If you have heard of astrobiology, it is just space biology, just like we have space medicine. People tend to think that you have to be an engineer to be a space scientist. No! Engineering is just the tool for putting satellite in space, for developing telescope but the actual study itself is not for engineers. You'll have to study life in space and it is not engineers that will do it. So, my background is biological science with specialization in genetics.

NBRI Newsletter: From hindsight, can you give an overview of your feelings and future dreams when NASRDA under your leadership launched Nigeria's first satellite into orbit.

Senator Boroffice: Well for me, it was very exciting when we launched the first Nigerian satellite. But I must tell you that in doing it at that time, it was like trying to do something that was impossible. And you know, there was the danger of that satellite failing. So, if it had failed you

know the whole country would have turned against us and the publicity would have been negative. We were lucky that it didn't fail; and when it succeeded, the country was happy. We were not even thinking of moving very fast in the direction of launching additional satellite.

“There are three things that a Nation needs for its socio-economic development: Security, sound Economy and S&T; and it is S&T that drives them all.”

The President of the Federal Republic of Nigeria then, Chief Olusegun Obasanjo, was so happy and impressed that he said, “Look, can you launch Communication Satellite?” We said “Yes”. He said, “Please go ahead and

do it? You see, when you want to launch a satellite, you prepare two statements, one for failure and the other for success. It now depends on what happens and that will determine which one you will read. We thank God that it succeeded and that has really encouraged many people in Nigeria to develop more interest in Space Technology.

NBRI Newsletter: As the pioneer DG/CEO of NASRDA and with your monumental achievements in the field of

space science and technology, how has this impacted on Nigeria's development?

Senator Boroffice: First of all, let me say that I should not take the credit alone. In NASRDA, we worked together as a team. So, it was a team work that produced it and these are some of the things that our Chief Executives must know. There is no Chief Executive that is omniscient; you must be able to exploit the strong part of your lieutenants to achieve your purpose.

Well, I think because satellite does not have direct impact on people, they find it difficult to appreciate the relevance. There are people carrying cell phones about; they don't know that it has a lot to do with space technology? Even the DSTV we watch is also based and dependent on space technology. In

Nigeria, I can speak on the benefits of our earth observation satellite. It may interest you to know that many projects in Nigeria have been executed in the area of agriculture, erosion, land use, land cover which are very important areas if you want to understand your environment and country as a whole; to utilize the land mass, you need the land use map which we have done. We had a project on Fadama Land Formation System. There are so many ways Nigeria's earth observation satellite has been put to use; but because the impact doesn't come to individuals, people don't really appreciate it. I want to assure you that over the years, the launch of the Nigerian satellite has made tremendous impact on the economy of the country. Even from the simple knowledge that we don't have to go out to buy satellite imageries anymore, that shows we are conserving foreign exchange; and we can now produce our satellite images within the country and sell to other African countries. Talking about Africa in general, we have now moved to establish the West African Space Agency and Nigeria is taking the lead and this is because of the way and rate we have pursued our space program.

“...If our leaders want to achieve remarkable progress, they should embrace S&T.”

NBRI Newsletter: You once commented that: “It is rather unfortunate that the Federal Government is not committing enough funds to Science and Technology in the country.” How have you or do you intend to use your present position as the Chairman, Senate Committee on S&T to enhance better funding for Agencies/Parastatals under the FMST for maximum results?

Senator Boroffice: Well, if I said then that it was unfortunate; now, I will say that it is most unfortunate. This is because the situation has not improved. You can't do science based on budget envelope. I have tried my best to let the Government appreciate that you cannot pay lip service to Science and Technology without commensurate funding and expect it to drive the

nation's socio-economic development. You see, what was allocated to S&T was about 0.001% of the 2012 budget. This is a far cry when compared to

what prevails in developed countries where the minimum is 1%. So I find it hard to believe that we really appreciate Science and Technology; and there is no way the nation can effectively move forward without S&T.

There are three things that a Nation needs for its socio-economic development: Security, sound Economy and S&T; and it is S&T that drives them all. You see, no matter how well equipped you are in terms of security, as long as you cannot develop your own indigenous capability, your security is not independent. Same thing with the economy; as long as you depend on foreign technologies, even in your domestic production, you are not independent. The same for education, agriculture, aviation, transport, etc.; as it is S&T that drives these crucial sectors. We have had series of programmes aimed at developing the economy but all have failed: Operation Feed the Nation, Green Revolution, NEEDS, etc.; all have failed and if we are not careful, the current development programme of

"I must say that NBRI is doing very well; and in the National Assembly, it is very popular especially with its Skills Acquisition Centres"

Government, the Vision 20:2020 might follow suit. Well, as for the current Transformation Agenda, maybe because we have not concluded it, but I have not seen how S&T has been utilized in driving the Transformation Agenda of Mr. President. We will like to participate and give ideas because a nation that divorces S&T from the three pillars I mentioned earlier is doomed to fail. Let me give you an example: the Soviet Union used to be powerful militarily; but unfortunately they concentrated their S&T on security and neglected their economy which went so bad until recently that it is picking up. So unless our leaders appreciate the role of S&T in national development, we are going to be in serious trouble; and the more we delay, the worse the consequences will be.

NBRI Newsletter: As you mentioned earlier, the average Nigerian on the street seems to be unappreciative of scientific and technological breakthroughs simply because he or she does not feel the direct impact. How can the ordinary Nigerian appreciate and utilize R&D results especially in the S&T sector?

Senator Boroffice: I must say that it is not the Senate Committee that will ensure this but rather it is you (the Research Institutes) that should do it. When you promote the innovations that have been developed, we (the National Assembly) will give you the support. But unfortunately, I think based on the type of religion we practice and our cultural background, we are very superstitious! We don't believe in S&T. For instance, a man is sick and instead of going to find out the cause of his illness, they conclude it is a demonic attack or witchcraft! We also believe in replacement, i.e.



when something goes bad, we just buy a new one to replace it. So you should try and advocate for science and technology. What you are doing now (this interview) will help, because when it is published for the public to read, someone might pick one or two things. Also, everything on you, apart from your natural body, is product of Science and Technology! Your clothes, wristwatch, biro, etc. are all products of Science and Technology; yet people say they do not know the importance of Science and Technology. We are pretenders in this part of the world.

NBRI Newsletter: How best would you use your vast wealth of experience in advising the administration of President Goodluck Ebele Jonathan towards achieving his Transformation Agenda?

Senator Boroffice: I think Mr. President should assemble a small group of Scientists including all the Directors-General of the Federal Ministry of Science & Technology and say look, this is my Transformation programme. I want to drive it with S&T, how do we achieve

it? Then you can see better allocation to S&T and from there you see people making impact on the economy. Let people put heads together, look at his goals and objectives and see how we can bring S&T to drive it.

NBRRI Newsletter: NBRRI, as one of the Agencies under your Committee is well known to you. What is your advice for the present leadership of the Institute?

Senator Boroffice: My advice is that they should continue to move forward. They should never have the sense of 'I have arrived'. They should always believe that they can do better. But I must say that NBRRI is doing very well; and in the National Assembly, it is very popular

"I think Mr. President should assemble a small group of Scientists including all the Directors-General of the Federal Ministry of Science & Technology and say look, this is my Transformation programme. I want to drive it with S&T, how do we achieve it?"

especially with its Skills Acquisition Centres. However, NBRRI can still do more if the nation appreciates what it is doing. We hear of building collapses, road pavement failures, etc. We can have NBRRI advice and provide consultancy on Government building and road construction projects. But that is hardly done. Also, I am aware that NBRRI has developed varieties of local construction materials and processes but Government is not adopting them. So Government can come up with a policy and say, we want to develop from this time till the next

five years; anybody who wants to develop a housing estate in Abuja or elsewhere must use NBRRI Technology as it is cheaper and durable. But these boil down to having, exhibiting and sustaining the political will.

NBRRI Newsletter: Some countries are developing at a fast rate because it is driven by Science, Technology & Innovation. How can Nigeria emulate them and allow its socio-economy development to be based and driven by S,T&I?

Senator Boroffice: It is the same answer I will give you: Political will! If our leaders want to achieve remarkable progress, they should embrace S&T. Go and read the story of a country like Singapore; how it developed within a very short period of time because it employed S&T. Also there is the example of Malaysia and even South Korea. There was a time I was doing my doctoral fellowship in the UK in 1978. The University I was had about 50 Malaysians doing Science and Engineering. That country invested in S&T and today is reaping the benefit of it.

NBRRI Newsletter: Sir, you briefly acted as a Vice Chancellor. Do you see yourself going back to the Academia, maybe after your service in the National Assembly as a Senator of the Federal Republic? Also, how are you coping with being the Asiwaju of Akokoland?

Senator Boroffice: Firstly, going back to the classroom will be exciting but I must say that after staying away for a long time, I have forgotten most of the things I need to do (General laughter). You see, science is dynamic; there are some tools and technologies that if I read a journal in my field now, I may not understand what they are talking about. So I will need a refresher course for about a year or so to re-educate and re-orientate myself. As for being the Asiwaju of Akokoland, well I thank God. Only that it cost a lot of money to maintain the title.

NSE ABUJA CHAPTER HOLDS 2012 ENGR. CHARLES MBANEFO DISTINGUISHED LECTURE

The 2012 Engineer Charles Mbanefo Distinguished Lecture organised by the Nigerian Society of Engineers (NSE) Abuja branch, was held at the Ladi Kwali Hall of the Abuja Sheraton Hotel on the 31st of October, 2012.

The theme of this year's lecture which was *Infrastructure Concession in a Developing Economy* was delivered by Dr Carlos Henrique Siqueira of CCR Ponte in Rio de Janeiro, Brazil.



The lecture highlighted the need for concessioning of infrastructure using the Rio-Niteroi bridge in Brazil as a case study. The Rio-Niteroi Bridge is a box girder bridge located at Guanabara Bay and connects Rio de Janeiro to Niteroi municipality. It is currently the longest pre-stressed bridge in the southern hemisphere and the sixth longest bridge in the world.

Dr. Carlos highlighted his involvement in the Program for Highway Concessions introduced by the Brazilian Government in 1995 and how this agreement has maintained the bridge in excellent condition to date.

The keynote address was delivered by the Nigerian Ambassador to Brazil, Amb. Vincent A. Okoedion, Esq. highlighted efforts made at improving the bilateral relations between Nigeria and Brazil.

The DG/CEO of NBRI, Professor D.S Matawal, in his goodwill message, charged the

participants to tackle engineering challenges using cutting edge innovations. He recommended the construction of a suspension bridge over the existing bridge at Lokoja, Kogi State as a solution to the flooding challenge in the area. He also recommended the design and construction of double decker roads along the Nyanya-Mararaba Expressway to ease traffic congestion on this route.

Prof. Matawal commended the Guest Speaker on his well researched and delivered paper. He provided a brief on NBRI achievements which are relevant to the construction industry; and highlighted that the Institute was in the process of setting-up a State-of-the-Art laboratory testing facility at its headquarters in Abuja and it will be available for the use of stakeholders, for testing construction materials. He also emphasized the need to expose younger Engineers to international trips to stimulate their design/innovative skills.

SETTLE DOWN TO WORK

...DG, NBRII enjoins new staff

Recently, the Nigerian Building and Road Research Institute (NBRII) increased its staff strength for greater productivity. To get the staff acquainted with activities in the institute, induction programmes were held concurrently at the NBRII administrative headquarters in Abuja and the NBRII National laboratory complex Ota, Ogun State.

The newly employed officers included research and non-research personnel. The staff, who were full of enthusiasm, expressed gratitude for the opportunity to serve the nation through the Institute.

In his address to the new entrants, the DG/CEO of NBRII, Professor Danladi Slim Matawal intimated them on the historical background of the Institute and emphasized that everyone is employed to play their role at improving the Institute especially in R & D. Matawal further

spoke of his disdain for non-challant and unproductive attitude to work and admonished them to be dedicated to duty.

According to the DG, NBRII has a lot of potentials; hence, the need to re-brand the Institute's laboratories, create intervention programs, amongst others.

The event also saw each departmental head give a brief presentation of their various departmental activities and roles they play in the Institute's Research and Development (R&D) drive. These departments include, the Building Research Department (BRD), Road Research Department (RRD), Engineering Materials Research Department (EMRD), Planning and Information Technology Department (PIT) and Administration and Finance Department (DAF)

The inductees at Ota were later conducted round the office vicinity, the Skills Acquisition Centre, Pozzolana Pilot Plant site, EMRD Exhibition Centre, amongst others



A cross section of some newly employed staff at NBRII Administrative H/Q in Abuja

POZZOLANA CEMENT AND NBRI ALTERNATIVE CEMENT FLAGSHIP PROJECT

Makava D. O., **Omange G.N. and ***Mashem P.

*Asst. Chief PRO, NBRI, **Director, Planning and Information Technology and
***Principal Public Relations Officer, NBRI

According to Melita (1987), pozzolana is a siliceous and/or aluminous material which in itself possesses little or no cementitious value, but which will, in finely divided form and in the presence of water, react chemically with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties (ASTM C618). The broad definition of a pozzolan imparts no bearing on the origin of the materials, only on its capability of reacting with calcium hydroxide and water. A quantification of this capability is comprised in the term *pozzolanic activity* (Snellings et al (2012)).

HISTORY

In the ancient world, mixtures of calcined lime and finely ground reactive aluminosilicate materials were pioneered and developed as inorganic binders. Architectural remains of the

Minoan civilization on Crete have shown evidence of the combined use of slaked lime and additions of finely ground potsherds for waterproof renderings in baths, cisterns and aqueducts. Evidence of the deliberate use of volcanic materials such as volcanic ashes or tuffs by the ancient Greeks dates back to at least 500-400 BC as uncovered at the ancient city of Kameiros, Rhodes. In subsequent centuries, the practice spread to the mainland and was eventually adopted and further developed by the Romans (Spence, et al 1983).

The Romans used volcanic pumices and tuffs found in neighbouring territories, the most famous ones found in Pozzuoli (Naples), hence the name pozzolan and in Sepni (Latium). Preference was given to natural pozzolan sources (such as German Trass), but crushed ceramic waste was frequently used when natural deposits were not locally available. The exceptional lifetime and preservation conditions of some famous Roman buildings such as the Pantheon or the Pont du Gard constructed using pozzolan-lime mortars and concrete testify to both the excellent workmanship reached by Roman 'engineers' and to the durable properties of the utilized binders.

Much of the practical skills and knowledge regarding the use of pozzolans was lost at the decline of the Roman Empire. The rediscovery of Roman architectural practices as described by Vitruvius in *De Architectura*, also led to the re-introduction of lime-pozzolan binders. Particularly, the strength, durability and hydraulic capability of hardening under-water made them popular



construction materials during the 16th – 18th century. The invention of hydraulic cement and eventually Portland cement in the 18th and 19th century resulted in a gradual decline of the use of pozzolan-lime binders, which develop strength less rapidly.

Today, the use of pozzolans as addition (the technical term is “supplementary cementitious material” usually abbreviated as ‘SCM’) to Portland cement concrete mixtures has become common practice. Combinations of economical and technical aspects and increasingly, environmental concerns have made the so-called blended cements, that is, cements that contain considerable amount of supplementary cementitious materials (mostly around 20%, but over 80% by weight in Portland blast furnace clay cements) the most widely produced and used cement type by the beginning of the 21st century.

COMMON POZZOLANS

The most commonly used pozzolans today are industrial by-products such as fly ash, silica fume from silicon smelting, highly reactive metakaolin and burned organic matter residues rich in silica such as rice husk ash. Their use has been firmly established and regulated in many countries. However, the supply of high quality pozzolanic by-products is limited and many local sources are already fully exploited. Alternatives to the established pozzolanic by-products are to be found on the one hand in an expansion of the range of industrial by-products or societal waste considered and on the other hand in an increased usage of naturally occurring pozzolans. Natural pozzolans are abundant in certain locations and are extensively used as an addition to Portland cement in countries such as Italy, Germany, Greece and

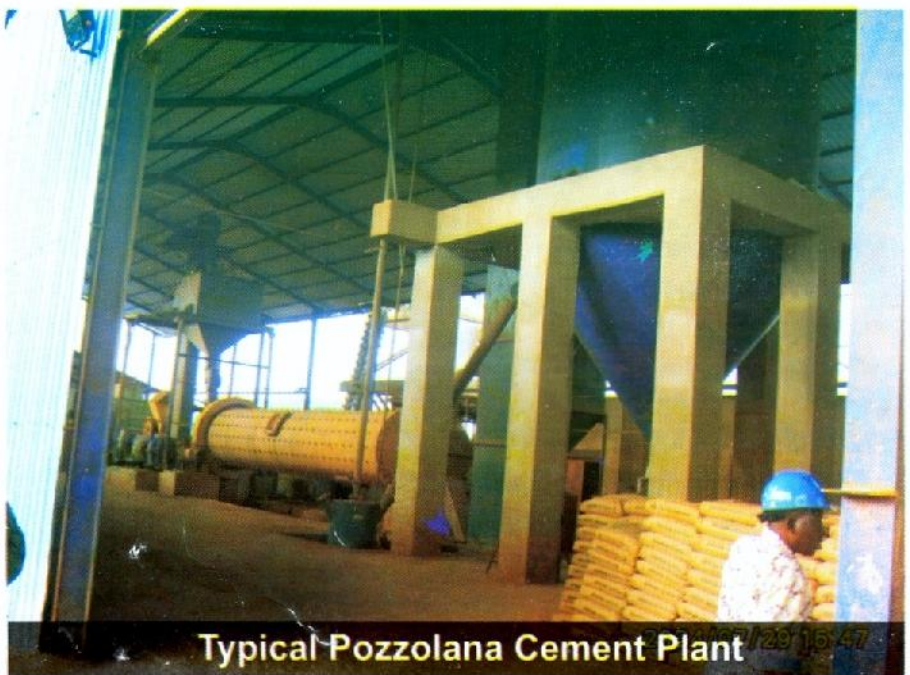
China. The great majority of natural pozzolans in use today is that of volcanic origin like volcanic ashes and pumices.

BENEFITS OF POZZOLANS

The benefits of pozzolan utilization in cement and concrete are three fold. First is the economic gain obtained by replacing a substantial part of the Portland cement by cheaper natural pozzolan or industrial by-products. Second is the lowering of the blended cement environmental cost associated with the green house gasses emitted during Portland cement production. The third advantage is the durability improvement of the product. Additionally, the increased blending of pozzolans with Portland cement is of limited interference in the conventional production process and offers the opportunity to valorize large amounts of industrial and societal wastes into durable construction materials.

POZZOLANA CEMENT PILOT PLANT IN NIGERIA BY NBRI

In Nigeria, different types of pozzolans and pozzolanic materials have been investigated by various researchers in tertiary institutions and the Nigerian Building and Road Research Institute. Both natural pozzolans (such as



Typical Pozzolana Cement Plant

volcanic ash) and artificial pozzolans (such as those from agro-industrial waste like slag, fly ash, etc.) are known to have good cementitious materials and are well documented in literature. Anigbogu (2011) provided an elaborate presentation on pozzolanic materials in Nigeria. In some developed countries, pozzolanic cements have been produced in commercial quantities and used in construction. In Africa, the use of conventional Portland cements in construction, though expensive, is common. Apart from Ghana and probably South Africa, no other country in Africa has explored and ventured into the use of blended cements in construction.

With the appointment of Prof. D. S. Matawal as the Director-General/Chief Executive Officer of the Nigerian Building and Road Research Institute, NBRI, one of the first flagship projects he embarked upon was the establishment of a Pozzolana Pilot Plant for the commercial production and promotion of alternative cement in Nigeria. This involved a series of activities which included but were not limited to the following: the techno-economic assessment of the potentials of such a plant in Nigeria; drawing from the example of Ghana where a pilot plant and a commercial production centre exist; assessment of the technical parameters; identification and sourcing of raw materials and machine components; design of a blueprint and production centre of the pilot plant, etc.

To fast track the setting up of the pilot plant and as a short term measure, NBRI went into partnerships with a Chinese fabricating company for the fabrication of some of the equipment needed for the factory. These included a Ball Mill, a Nodulizer, a Hammer Crusher, Metering and Bagging Facility, Draught Fan and Chain Bucket Elevator, to specifications. The long term strategy is to domesticate the fabrication of these Machine components for production plants planned for the future. Apart from this, NBRI directly

undertook the setting up of a Vertical Shaft Kiln required for the plant. The Shell of the cylindrical Kiln is to be constructed with mild steel while refractory bricks will be used for refractory lining of the kiln.

The NBRI Alternative (Pozzolan) Cement Pilot Plant is located at the National Laboratory Complex of NBRI in Ota, Ogun State. At the moment, the infrastructure for the Pilot Plant is at an advanced stage of completion, the machine components have been fabricated and supplied to site while the construction of the vertical shaft kiln is in progress.

For this pilot plant, the primary raw material for the pozzolana cement is clay which will be calcined and pulverized. There are clay deposits in the catchment area of the pilot plant. These exist in Owode-Ketu, Ijoko and Motoyewa of Ogun State among others. The basic raw materials, however, are agro-wastes but their suitability is in doubt.

Future Plants have been earmarked to utilize Volcanic Ash prevalent in Plateau State; and Fly Ash, Rice Husk Ash, Bagasse (sugar cane ash), etc. located in different parts of Nigeria.

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LAGOS ZONAL OFFICE IS POISED FOR GREATER HEIGHTS

... MRS. MABEL IGWEONU, COORDINATOR OF NBRI LAGOS ZONAL OFFICE

NBRI Newsletter: May we know you?

MRSIGWEONU: First of all, thank you for finding time to talk to me. I am Mrs. Mabel Igweonu. I hail from Ozubulu Local Government Area of Anambra State. I am married with Two (2) children. I attended Girls Secondary School, Ozubulu. After that, I went to Federal College of Education, Katsina and also the University of Port Harcourt. I started work with NBRI in 1998 and presently I am a Principal Admin Officer and Head of the Lagos Zonal Office of the Institute.

NBRI Newsletter: Prior to the advent of the present Management of the Institute, it is a fact that the Lagos Zonal Office was not active. As the Head of the Office, how will rate the level of activities now?

MRSIGWEONU: Well, I thank God because the Lagos Zonal Office is today witnessing a lot of activities more than any other time. Our staff have been busy attending programs like trade fairs and exhibitions. They are also involved in training and capacity building. For instance, around April 2012, our staff participated in the Lagos Housing Fair 2012 and the Institute had an excellent outing. During the event, the Organisers even recommended the general public to patronize NBRI. In fact, NBRI staff were asked to stand up for recognition which we did and got a resounding applause. The Lagos Zonal Office also participated in the exhibition conducted by the Nigerian Academy of Engineering in July 2012.

The Staff of the Office came up with a proposal, for Management to consider, on how to utilize the Lagos Zonal Office to serve as a training center. We (the Zonal Office staff) now meet periodically to discuss and brainstorm on how

best we can contribute to the overall growth and development of the Institute.

N B R R I Newsletter: What is the present staff strength of the Zonal Office?



MRSIGWEONU: There are currently nine (9) staff working at the office.

NBRI Newsletter: With all these activities that you have mentioned, what benefits or advantages does the location of the Zonal Office have in achieving all your targets?

MRSIGWEONU: You know quite well that the Lagos Zonal Office is strategically positioned at 15, Awolowo Road in Ikoyi. This is of immense advantage as the Lagos environment is a booming beehive of socio-economic activities. You find that people come to the office every time to ask about our products and activities. Our staff are also involved in the distribution of Newsletter to Stakeholders in this environment. The Newsletter has generated a lot of awareness and raised the interest of different shades of stakeholders. This has brought in new clients for us. Remember there was a time that the Lagos Zonal Office was given twenty (20) NBRI brick making Machines to sell. Within a short period, we sold all of them. Since then, a lot of people have been coming to the Office making enquiries about our products and NBRI technical publications. Also not long ago, two people called in asking if the latest edition of NBRI Newsletter was available. We

had to request them to come for them in the Office. So, there is now considerable awareness about the Institute; but again, more can still be done especially in publicising and promoting our research results so that stakeholders and the general public can benefit.

NBRI Newsletter: As the Coordinator of the Western Zonal Office, Lagos, what are some of the challenges that you are facing?

MRSIGWEONU: I have been confronted with some challenges like the issue of lack of power (electricity) and water supply to the Office. Also, the Office was not maintained and some of the facilities like windows at the Office were falling off. Whenever it rained, parts of the office would be flooded. The generating set was also not functioning. But all those are history now. All thanks to the present Management for taking decisive actions to revive the Zonal Office.

The generator has been repaired and provides alternative power to the Office. As you can see for yourself, the Zonal Office is currently being given a comprehensive facelift as the Office is now being refurbished.

NBRI Newsletter: What other areas do you think the present leadership of the Institute can intervene to make the Zonal Office more functional?

MRSIGWEONU: The area of transportation comes to mind. The Institute can provide vehicles to ease our reach out activities. Also, more of NBRI's technologies/products

should be made available to the Office to challenge us to better marketing strategies for their massive use and adoption in the Nigerian construction industry, especially in the South-west Nigeria catchment area. This will further spread the fame of the Institute to more people.

NBRI Newsletter: How would you assess the leadership style of the present Institute's Management?

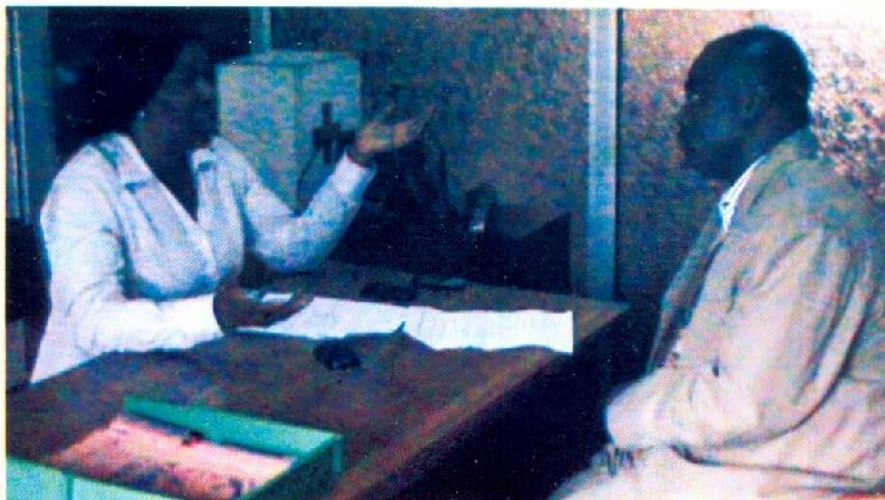
MRSIGWEONU: I think for now it is too early to assess the style of the present Management. But I will say that the leadership is doing well so far and on the right track. The Management is giving serious attention to the numerous challenges it met on ground; and in

spite of the lack of funds and the harsh economic condition of the country, significant achievements have been recorded within a very short time. The

Management is doing well and trying to carry everybody along; and I believe that with time, we will see more good things and witness NBRI gearing towards the right track and making giant strides in the Nigerian construction industry. Only then can one truly assess the present Management.

NBRI Newsletter: Recently, new staff were injected into the system. Do you in the Laos office have some? If you do, how is their level of involvement in and enthusiasm to work?

MRSIGWEONU: As you rightly said, new



staff have been recruited and yes, the Lagos Zonal Office has a few. I can tell you that the new staff are committed to the work and have shown interest in the Institute. When they first came, we made them understand that they are now part of the broader civil service system; as such, there were rules and regulations that will govern their conduct. We have also engaged them in proposal writing and evolving ideas that will move the Zonal Office and Institute as a whole, forward.

NBRRI Newsletter: Can you tell us some of the ideas and innovations which the Office has come up with?

MRS IGWEONU: For instance, when we had our 2011 end of year party, the Zonal Office produced NBRRI-crested T-shirts. This is one of the ideas that we in the Office evolved. This initiative has further brought more awareness to the Institute as people, on seeing us wearing it, ask about the acronym NBRRI. Most times, people ask if NBRRI is a new Agency of Government (laughs). We also go further to enlighten the people about NBRRI mandates, vision, mission and activities. So the NBRRI T-shirt alone has made a lot of impact in terms of publicity and awareness as we, the staff, made it mandatory to adorn the wear every Friday of the week. This is in addition to our NBRRI Newsletter, which we issue out on a quarterly basis and as soon as they are produced. This publication is also crucial in our awareness drive. With all these, the patronage to the Institute has increased tremendously as more people visit the Office on a regular basis to seek information about the Institute, what we do and how we can impact on them. We attend all their enquiries; but in few cases, we refer them to the National Laboratory Complex in Ota or the Administrative Headquarters in Abuja depending on what was enquired.

NBRRI Newsletter: Having adopted these unique concepts to further market, popularize and create awareness for the

Institute, where do you see NBRRI in the next few years?

MRS IGWEONU: I have no doubt that NBRRI will go very far; not just nationally but even internationally. I can see the Institute excelling and going global. On our part, I can confidently assure you that the Lagos Zonal Office is poised for greater heights.

NBRRI Newsletter: On a general note, what is your advice to the present Management of the Institute?

MRS IGWEONU: The advice I have for the present Management is that they should continue in the direction they are going and surpass the tempo. If they do so, I believe God will strengthen them and give them direction to take the Institute to international levels.

NBRRI Newsletter: What about the staff? Any advice?

MRS IGWEONU: Staff should be more committed to duty.

NBRRI Newsletter: Finally how do you combine the responsibility of being a mother at home and a worker? Also, how do you cope with all these, with the hustle and bustle of a city like Lagos; and what do you do with your spare time, if you have any?

MRS IGWEONU: (Laughs) Well, I will say that everything depends on the individual and how he or she plans. When you know your schedule and plan to accommodate all of it, then with lots of prayers to God you can achieve a lot and cope with the challenges. During my spare time I engage myself in a lot of charity work in the Church. As a devout Catholic, I find pleasure spending my free time on charitable duties within the Church.

NBRRI Newsletter: Thank you very much for speaking to us.

THE ANCIENT PALACE IN OTA TOWN, OGUN STATE NIGERIA



His Royal Highness
Oba Moshood Alani Oyede
Current reigning Olota of Ota

In 1927, His Royal Highness, the then Olota of Ota, Oba Salami Oyelusi of Ikogbe Ruling House in Ota, built a storey building to serve as his palace using locally sourced materials for his personal abode. The 85 year old palace, which is within the vicinity of the current palace, was built by local bricklayers using mainly red laterite bricks for the walls, planks and drums for the roofing while screws rather than nails were used to tighten the roof. However, some materials like the floor tiles were brought in by the Portuguese during their visit to the town, for the completion of the building.

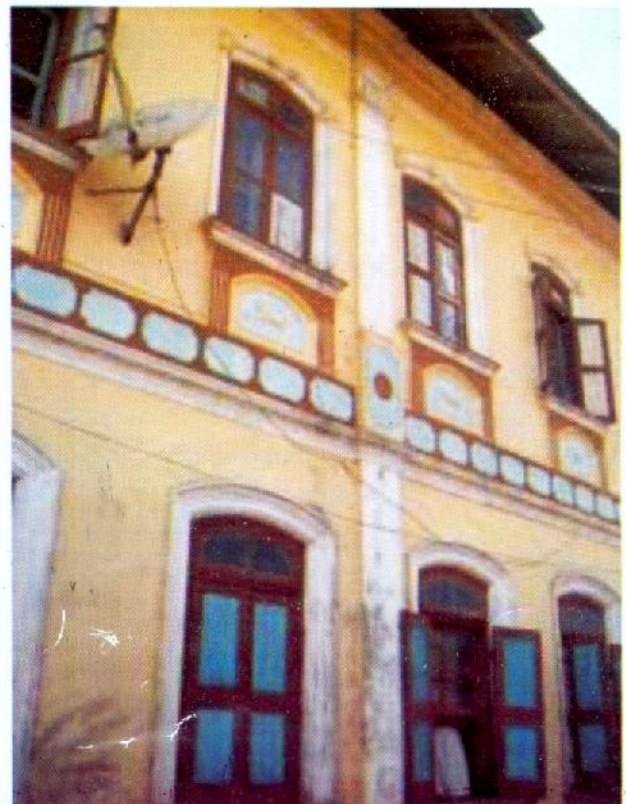
As at the time the building was erected, there were no conventional sandcrete blocks or cement house in the area except mud and burnt bricks houses. The masons then were rightly referred to as "bricklayers" because they lay bricks (and not sandcrete blocks that were not available then). Since mechanical and chemical binders were absent then, the art of bricklaying to get strong bricks involved firing the green bricks before use. The process involved batching and curing the laterite, i.e. mixing the laterite with water, pounding it and covering with palm fronds to retain moisture for curing. After a week or so, the green bricks would be fired in clamp kilns. This involves assembling the green bricks in a pyramid form, leaving space in-between for

firewood in an oven/kiln, and firing it for as long as the bricks are fired and turns red.

A visit to the palace showed that these building bricks are still intact with little or no maintenance, thus attesting to its durability. The lintel of the building were also made of burnt bricks; the hinges that held both doors and windows are heavier than the ones being used today; and up till date, there has not been any wall cracking.

The incumbent Olota of Ota, His Royal Highness, Oba Moshood Alani Oyede, declined suggestion of pulling down the structure for a more befitting modern structure when he ascended the throne. Instead, he donated the building to the Ota Community as the central palace for historical purposes.

This is an example of strength and durability of burnt bricks in construction. This historical piece is considered important more so that the National Laboratory Complex of NBRI is located in Ota, Ogun State. Some of NBRI's technologies include the manual and semi-mechanised machines for the production of compressed bricks which can then be fired in clamp kilns or other forms of Kilns such as the down draught Kiln.



BIRTHDAYS

NAME	DEPT.	DATE BIRTH
Okon Daniel M	RRD	1 st October
Davies I.	A/F	3 rd October
Agbo Sunday	CES	5 th October
Ogala Mike	BRD	6 th October
Olotu Garba Muhammed	DG's Office	7 th October
Tajumade Olufemi Olanrewaju	A/F	9 th October
Obande Peter Obande	A/F	10 th October
Gidado M. Tukar	CES	10 th October
Gwiwanyin Sunday G	RRD	10 th October
Adeyemi O. A.	BRD	10 th October
Subair Olakunle	EMRD	10 th October
Alabi Folasade Felicia	A/F	11 th October
Adeyemi Aliu	BRD	12 th October
Abubakar Tahir	A/F	15 th October
Ajayi Olumide	A/F	16 th October
Mozea M. N.	BRD	18 th October
Obiora Frank	RRD	21 st October
Ikani Ada	BRD	21 st October
Prof Danladi Slim Matawal	DG's Office	30 th October
Olutu Mohammed	PIT	2 nd Nov
Fowobaje F. M.	A/F	4 th Nov
Akor Ogochide Innocent	A/F	7 th Nov
Umochi Thomas	CES	10 th Nov
Peter Mashem	PIT	11th Nov
Zenreth Jerome Gamaliel	RRD	12 th Nov
Nuhu Suleman	PIT	15 th Nov
Inyang Enin Ata	BRD	15 th Nov
Aderoku Akinpelu	A/F	16 th Nov
Egbunike Grace	A/F	16 th Nov
Oieka Gladys	BRD	18 th Nov
Joe-Abava Justina	RRD	19 th Nov
Alabi Vincent Ojo	DG's Office	20th Nov
Aisha Samiwa Yakubu	DG's Office	26 th Nov
Ahmed Sani	BRD	28 th Nov
Sule Amos Dow	A/F	28 th Nov
Ameh Ikovi Gloria	PIT	28 th Nov
Ahmed B. Sanni	BRD	28 th Nov
Afaha Philips Loveth	CES	29 th Nov
Nden Timman	BRD	1 st Dec
Ezirim Sunny Okwuchi	CES	2 nd Dec
Nwaigwe Daniel	BRD	3 rd Dec
Akims Ufoh	A/F	6 th Dec
Lawal R. B.	EMRD	6 th Dec
Sanda Abdullahi Usara	BRD	10 th Dec
Danwiwo M. Adekunle	A/F	12 th Dec
Asala Joseph	PIT	12 th Dec
Adeh Enebi Solomon	EMRD	14 th Dec
Ekanem E.S.	BRD	16 th Dec
Dika Sunday Musa	A/F	20 th Dec
Duru Chuks	BRD	22 nd Dec
Nataala Usman	BRD	22 nd Dec
Ajayi A. A.	RRD	22 nd Dec
Hassan Yusuf	CES	24 th Dec
Ramallan Mohammed	A/F	25 th Dec
Didel Mabilong Juliet	RRD	26 th Dec
Osei Regina Ime	A/F	28 th Dec
Stephen Joseph	A/F	30th Dec
Enebi Stephen	EMRD	30 th Dec
Domi Ali	A/F	30 th Dec
Sulaiman Oladimeji	PIT	31 st Dec

WEDDINGS



MR. SULE EMMANUEL of Road Research Dept. got married to former Miss Comfort Ijachi on 1st Dec. 2012.



MR. & Mrs Ogboji Francis got married on 3rd November 2012 @ Faith Church of Christ, Otukpa, Benue State.



MR. ADEBAYO OLUWASEYI OLAIFA of Engineering Materials Research Department got married to Miss Azeezat Abiola Adebari on 17th November, 2012.



MR. & MRS. OJOBANE MARTIN got married on 10th November, 2012 @ St. Luke Military Church, Comilla Barracks, Kaduna.

BIRTHS



Mr. Ikpl Omini Cosmas of Administration and Finance department gave birth to a baby, Samuel Jesam Omini, on 30th October, 2012.



Mr Ikong Aboyi Pius of Admin/Finance dept was blessed with a baby boy, Salvation Otume Ikong on 23rd November, 2012



Mr. Adeyemi James of Consultancy and Extension Services Department gave birth to twins, Peace and Precious, on 21st October, 2012.



Godspower O. Ajodo of Admin/Finance Dept. H/Q was blessed with a baby girl, Nancy Ojoche Ajodo on 29th Nov 2012

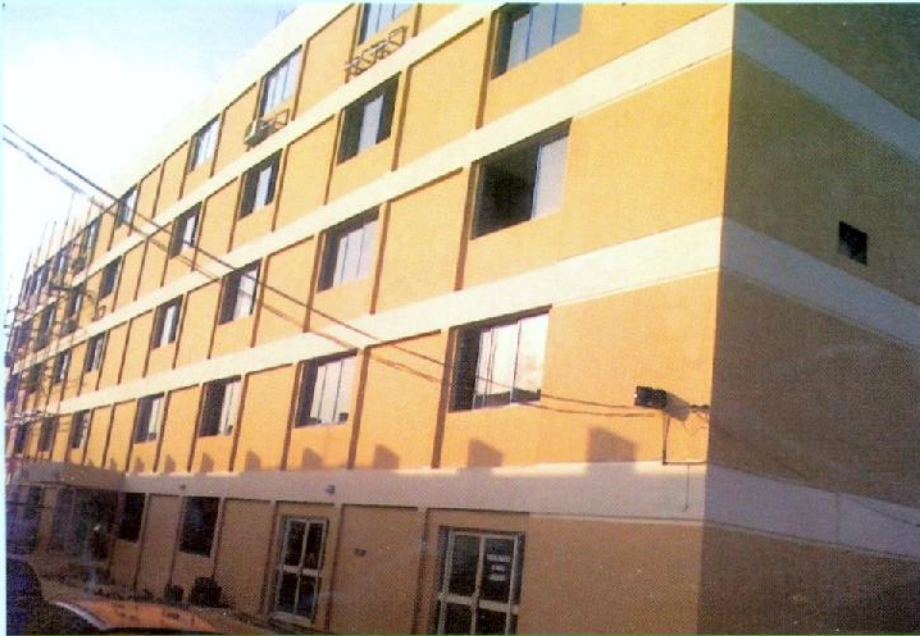


Mr. Yakubu N. Umar of Admin & Finance Dept was blessed with a baby girl, Aisha Yakubu on 29th November, 2012



Stephen Ogunro of Engineering Materials Research Department was blessed with a baby boy, Erioluwani Tioluwani Rehoboth Ogunro on the 16th October, 2012.

NBRI LAGOS ZONAL OFFICE TAKES ON A NEW LOOK



The New Look of NBRI Western Zonal Office at 15, Awolowo Road, Ikoyi Lagos.

The Western Zonal Office of the Nigerian Building and Road Research Institute located at 15 Awolowo Road, Ikoyi, Lagos is wearing a new look as it is undergoing comprehensive renovation. This was to effectively position the Zonal Office to strategically play its role in propagating, marketing and promoting NBRI activities and alternative technologies to the construction industry in the Western Nigeria catchment area. It will also serve as a one stop shop for construction activities.

NBRI Office, located at 15 Awolowo Road, Ikoyi, Lagos served as the Head Office of the Institute until 1998 when it was relocated to Abuja while the Laboratories were relocated to the current NBRI National Laboratory Complex at Km 10 Idiroko Road in Ota, Ogun State. The Ikoyi Office was subsequently re-designated Western Zonal Office. Subsequent attention received by this Office dwindled over the years. However, with the present NBRI administration under the leadership of Prof. D. S. Matawal, the South-West Zonal Office is receiving a renewed attention with a comprehensive renovation programme, which at the time of going to press, was at an advanced stage of completion. The renovation exercise involved the removal of the

failed asphalt pavement in the premises and replacing it with interlocking blocks; re-plastering of cracked walls; re-painting (internal and external); replacing old doors and windows with new ones; changing toilet facilities; providing electricity and water to the premises; replacing the underground tank; refurbishing the elevator, the security post; and general landscaping of the environment.

The building is, now speaking beauty with great aesthetic value befitting a Federal Parastatal of NBRI caliber. Once completed, the Lagos Zonal Office will be

put into beneficial use while taking advantage of its strategic location in a vital business district in Lagos.

While commenting on the comprehensive renovation programme at the Lagos Zonal Office, the Director-General/CEO, NBRI, Professor Danladi S. Matawal noted that the construction industry in Lagos needs to be assisted with R&D innovations and technologies through the Institute's extension services. He therefore promised to revamp the Lagos Office with more staff to make it a Display Centre



A Close-up view of Lagos Zonal Office, Ikoyi, Lagos